

Moderated Poster Session VI: General Urology, Stones & Endourology Friday, October 28, 2011, 3:00 pm – 4:30 pm

P82

President Wilson and the Management of Urinary Retention in 1919

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Background: Thomas Woodrow Wilson (December 28, 1856 - February 3, 1924) was the 28th President of the United States. He received a baccalaureate degree in 1879 from Princeton University and a doctorate from Johns Hopkins University in 1883. Wilson won the presidential election of 1912 when William Howard Taft and Theodore Roosevelt split the Republican vote. In September, 1919, Wilson suffered a stroke, leaving him paralyzed on the left side. During the acute phase of his recovery, the President suffered from urinary retention, which led to a urologic consult for its management. We discuss the case of President Wilson's urinary retention and the management of this common urological condition in 1919.

Methods: A literature search was performed on the management of President Wilson's urinary retention and the different treatments of urinary retention between 1889 and 1920.

Results: At 8:00 am, October 2, 1919, President Wilson suffered a severe stroke, with left hemi-paresis and urinary retention. The Foley catheter would not be invented until 1934, leaving straight catheterization as the least invasive intervention. The President's physician, Admiral Grayson, performed straight catheterization. The President's urinary retention continued and the following day Grayson was unable to pass a catheter. Dr. H. A. Fowler was called and, after trying multiple instruments, was able to empty the bladder. The following day straight catheterization became impossible and Dr. Hugh Young was consulted. At this time the President had gone thirty hours without voiding. A discussion was held on whether to proceed with surgical intervention. In 1919, options included suprapubic or perineal cystostomy to drain the bladder. Many cases of urinary retention at the time were treated with a two-stage procedure of suprapubic cystostomy followed by prostatectomy. The literature reported a mortality rate as high as 10% for this procedure. In 1917 soldiers who suffered spinal cord injury with urinary retention had a 47-80% chance of dying of urinary sepsis. Management of the President's condition was controversial.

Conclusions: President Wilson's urinary retention after his stroke was thought to be as a result of his immobility and enlarged prostate. In 1919 the options for urinary retention included straight catheterization and, in cases of its failure, suprapubic or perineal cystostomy, potentially followed by prostatectomy. Due to the risks of surgery, the President was ultimately treated with watchful waiting. His urinary retention resolved, followed by a period of urinary incontinence, and finally a complete return of voiding function.

P83

Efficacy and Safety Follow-up Results 3 -7 1/2 Years after Single Treatment with Transrectal NX-1207 in Multi-center Prospective Blinded Randomized Controlled Studies of Men with Lower Urinary Tract Symptoms Due to Benign Prostatic Hyperplasia

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Introduction: NX-1207 is an investigational drug for the treatment of lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH). NX-1207 is a novel prostate selective therapeutic protein which causes atrophy of prostatic tissue. NX-1207 2.5 mg is injected transrectally and bilaterally into the transition zone. In 4 U.S. Phase 1-2 and Phase 2 studies, NX-1207 efficacy, as measured by AUA symptom score index changes, reached statistical significance at 90 days. Subjects from these studies have remained blinded and have been assessed in ongoing follow-up studies to determine the long-term efficacy of NX-1207.

Methods: Subjects from the 4 trials completed follow-up questionnaires in an unselected basis, based upon retrospective availability. AUASI scores were measured at intervals of 7 years (Phase 1-2) and 3-5 years (Phase 2), and compared to controls (placebo, no treatment, or low dose).

Results Obtained: Overall in separate followup studies at 3 to 7 1/2 years after a single dosage of NX-1207, 37 to 58% of subjects had required no surgical treatments and were not receiving any BPH medication in the four studies. After 7 1/2 years, 58% of available Phase 1-2 subjects had no drug or surgical treatment for their BPH and had a mean improvement of 11.7 points in their AUASI scores. All follow-up study efficacy results reached statistical significance. There were no sexual side effects or significant adverse safety events attributable to study drug.

Conclusions: NX-1207 treatment offers an office based TRUS guided injection procedure for the treatment of BPH. Follow-up results after a single treatment indicate significant symptomatic improvement with an acceptable safety profile. This research was supported by Nymox Corp.

P84

Satisfactory Treatment of CPPS Reduces Incidence of CaP

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Incidence of CaP is 17% and a 50-year-old male has a 50% chance of having occult CaP. Previous work alluding a connection between prostate infections, albeit principally viral but may be bacterial and CaP, and there are others reporting pharmacologic reduction as much as 25% in CaP. There has been a 10 % reduction in CaP death since the introduction of PSA 15 years ago. This work is initially designed to show that "minimally invasive and complementary..medical therapy" gains satisfactory outcome for prostatitis patients, but a late breaking and incidental review of the raw data reveals a significant reduction in incidence of risk-stratified CaP and reinforces the assumption of a connection between infection and CaP and suggests the need for further advancement in this area.

Medical records of 2038 patients with prostatitis confirmed by microbiology and /or histology and satisfactorily treated with "minimally invasive and complementary.. medical therapy" were felt to deserve a last minute second look this time, focusing on the incidence of CaP. Of these, 1082 were younger than 35 and considered out of the cancer prone age group.

Remaining 956 were divided in two: those with family and dietary risk factors and those without. Dietary risk factors include smoking, animal fat, alcohol, caffeine. 18 admitted to these factors and 938 denied. Patients were followed up with DRE and yearly PSA. Biopsy was performed for persistent PSA elevation.

938 patients, 2 had persistent PSA elevations but negative biopsies, 1 was younger than 40. 1 had persistently elevated PSA and repeat biopsies showed prostatic intraepithelial neoplasm (PIN). Of the 18 with risk factors, 1 had high-grade adenocarcinoma for which RRP was performed but he eventually died from the disease. 1 had low-grade adenocarcinoma and successfully underwent RRP, giving an incidence of 11% for those with risk factors. Those without risk factors but with prostatitis satisfactorily treated with "minimally invasive and complementary..... medical therapy", incidence for CaP was for all practical purposes 0%.

In contrast to the previously reported 17% and 40% risk, this last-minute second look at the raw data, showed an unexpectedly reduced incidence of 11% CaP for high risk patients with prostatitis satisfactorily treated with "minimally invasive and complementary..... medical therapy." This suggests that further work is needed to define the connection between treated infection and CaP just as a second look is now being undertaken at our treatment for low-grade or indolent and high-grade CaP

P85

Efficacy of Hypericin in High Power KTP Laser

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Background: In the urological surgery, especially for the management of symptomatic benign prostate hyperplasia (BPH), lasers are widely used. On the other hand hypericin have been used as a photosensitizer since 1996. However none of the observers evaluated rapid effect of the high powered laser systems after the application of hypericin as a photosensitizer.

Methods: 16 rats were randomized into 4 groups of four of each; 1-120W KTP laser with hypericin application, 2-120W KTP laser only, 3- 80W KTP laser with hypericin application, 4-80W KTP laser only. Hypericin was given intraperitoneally 2 hours prior to laser applications. The laser incisions were made through the quadriceps muscle of the rats. During laser operation the bare fiberoptic was adjusted to move 8mm/sec, parallel and 3mm above the denuded quadriceps muscle. The depth and the width of the laser incisions were evaluated histologically and recorded.

Results: To standardize the laser effectiveness we used the ratio of depth to width. This new values showed us the depth of the laser application for per unit width. Acquired new values were evaluated statistically. Mean depth/width values were 231.6, 173.6, 214.1 and 178.9 in the group 1, 2, 3 and 4, respectively. The most spectacular result of the study was achieving higher tissue penetration degrees in the hypericin performed group rats. This difference was statistically significant ($p < 0.05$).

Conclusions: The results of our preliminary study demonstrated that hypericin may increase the effectiveness of the KTP laser applications. However, further studies are warranted to determine the value of this approach for clinical scenario and the encouraging results of this study.

P86 – PRIZE ESSAY WINNER

Prospective Randomized Double-Blind Trial of Grape Juice in Men with Lower Urinary Tract Symptoms

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Background: Lower urinary tract symptoms (LUTS) can impair lifestyle for patients and, if severe, lead to significant morbidity. There is increasing evidence that progression of obstructed bladder dysfunction is related to ischemia as well as reperfusion injury and the creation of free radicals. Many patients take alternative medications for their urinary symptoms either in addition to or as a substitute for traditional therapies, despite

the lack of clinical data to support these products. For example, grapes products are hypothesized to improve bladder function due to their antioxidant and membrane-protective actions. We prospectively studied the impact of a standardized grape product on urinary symptoms.

Methods: Men 45 years or older with significant LUTS were randomized to 8 ounces daily of either 100% Concord grape juice or a taste- and calorie- matched placebo. Participants were followed at 6 weeks and 3 months with validated questionnaires for LUTS, erectile dysfunction, and general quality of life in addition to PSA, uroflow, and serum and urinary antioxidant levels. The primary endpoint was change in LUTS on the Male International Continence Symptom (ICSmale) score. The secondary aim was correlation between the level of antioxidants (serum and urine) and changes in symptom scores.

Results: 113 participations were randomized with 17 withdrawing and 96 (86%) completing the 3 month follow-up. There was no difference in the primary endpoint between the groups (ICSmale score improved by a mean of 1.6 points in both groups.) There was no statistical difference between groups along the ICSmale irritative subset, PSA levels, or secondary questionnaires. A statistical significance was found between uroflow rates; however in isolation this should be interpreted with caution. Using linear regression analysis of all 96 men, there was no correlation between antioxidants (serum or urine) and changes in symptom scores.

Conclusions: Our study did not demonstrate any difference in lower urinary tract symptoms in men taking a daily 100% grape juice versus placebo after 3 months.

P87

A National Survey of Chief Residents on the Communicator Role in Urology Residency: Are We Communicating the Message?

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Background: The Royal College of Physicians and Surgeons of Canada (RCPSC) initiated its CanMEDS program in 1996 and details seven physician roles (medical expert, communicator, collaborator, manager, health advocate, scholar and professional). Despite the generally accepted importance of these roles nationally and internationally, there continues to be concern regarding appropriate educational methodology for the non-medical expert roles, particularly in the surgical specialties. We sought to assess Urology residents' perceptions and attitudes toward the Communicator Role, and the current effectiveness of education aimed at this crucial competency.

Methods: An anonymous, cross-sectional, self-report questionnaire was administered to all final year Urology residents in Canadian training programs from two consecutive graduating years (2010-2011). The survey was closed-ended and employed a 5-point Likert scale and was designed to assess familiarity with the concept of the Communicator Role and its application and importance to training and practice. Descriptive and correlative statistics were used to analyze the responses and for ease of reporting an agreement score was created for those responding with "strongly agree" and "agree".

Results: There was a 100% response rate from all chief residents (N=58). Most responses were similar between the two years other than a greater familiarity with the seven CanMEDS roles in the most recent year ($p = 0.03$). However, only 45% could identify the correct number of CanMEDS roles, and only 19% could correctly list all seven roles. A vast majority of residents responded that they were aware of the Communicator role as defined by CanMEDS (90% agreement), and most believed it to be important in residency training and in their future Urology practice. This is in stark contrast to perceived formal training in communication. A minority (38%) agreed that formal training or mentorship in communication was available at their institution, and only 38% felt that communication had been formally addressed during explicit sessions. Despite 84% of residents noting a significant mentor/role model to emulate in urology regarding communication with 93% aware that communication is part of their evaluations, only 48% believed that faculty frequently addressed communication during clinical learning experiences.

Conclusions: Despite knowledge and acceptance of the importance of the Communicator Role, there is a perceived lack of formal and informal

training of this essential non-medical expert role of Urology residency. It would seem apparent that there is a need for a redoubling of efforts to ensure appropriate instruction and evaluation in our training programs.

P88
Long-Term Results of Aspiration and Sclerotherapy for Hydroceles

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Background: Hydrocelectomy is the gold standard of therapy for hydroceles. Aspiration and sclerotherapy (AS) has emerged in the last century as a minimally invasive alternative to hydrocelectomy. To date, there are no long-term studies measuring the safety, efficacy and patient satisfaction of hydrocele AS, including the effect of AS on male sexual function. We sought to address the lack of long-term data through follow-up of patients one decade or more following their initial hydrocele AS at our institution.

Methods: All patients who underwent hydrocele AS between 1997 and 2001 at our institution were invited to participate in this 10-year follow-up study. Follow-up data collected on all patients who agreed to enroll in this study included: a focused urological history; a focused genitourinary physical examination; a non-validated 2-page Safety, Efficacy, Satisfaction, and Sexuality (SESS) questionnaire; the International Index of Erectile Function abbreviated 5-question (IIEF-5) questionnaire.

Results: A total of 31 patients underwent initial hydrocele AS. Preliminary data from patients that have completed the follow-up evaluation to date demonstrates that all patients reported being recurrence-free and had no scrotal pathology or pain in the follow-up period. Furthermore, all patients were content with the procedure, would recommend the procedure to others and would willingly undergo a second hydrocele AS should the hydrocele recur.

Conclusions: This is the first study to provide long-term 10-year follow-up data on hydrocele AS. Our results are limited by incomplete follow-up to date. However, our preliminary results show durability of results of hydrocele AS. Short-term patient satisfaction in the immediate post-operative period and long-term patient satisfaction one decade later was demonstrated. There were no recurrent hydroceles on follow-up examination. These results demonstrate long-term safety and efficacy of hydrocele AS and validate hydrocele AS in the treatment of hydroceles.

P89
Quality of Life Measurement Tools: AUA vs. EPIC

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Introduction and Objectives: Both the AUA Symptom Score (AUASS) and the Expanded Prostate Cancer Index survey (EPIC) have been used to assess changes in lower urinary tract symptoms after treatment for clinically localized prostate cancer. While the AUASS is shorter, the EPIC is broader as it covers incontinence, hematuria, and dysuria. The present study compares changes in the AUASS to changes in the urinary portion of the EPIC, including urinary summary and subscales (function, bother, incontinence, and irritative/obstructive).

Methods: All men undergoing prostate brachytherapy at a single institution completed both an AUASS and the EPIC survey pre-operatively and at

all post-operative visits. Patients were stratified into five categories based on the change in the AUASS (an increase of 5 or more, and increase of between 1-4, no change, a decrease of 1-4, and a decrease of 5 or more) from their previous visits. For each of these categories, changes in EPIC urinary summary and subscales were also recorded. Statistical analysis was performed to determine the correlation between changes in AUASS and changes in the EPIC urinary summary and subscale scores (Table 1). **Results:** Two hundred sixty eight patients completed 1304 surveys, all of which were included in the present study. Results showed a statistically significant correlation between changes in AUA and EPIC urinary summary scores and all subscales. Although all correlations were significant, the highest correlations were with the bother and irritative/obstructive symptom subscales while the lowest correlation were with the incontinence and function subscales.

Conclusion: While the EPIC urinary survey contains a greater number of questions and addresses a broader range of urinary symptoms, the changes in scores for both surveys are very similar in both direction and magnitude.

P90
Fellowship Choices of Graduates of Canadian Urology Programs

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Introduction: Urology training is constantly evolving with ever increasing skills and fund of knowledge. Little is known about the fellowship choices of graduating Canadian residents and their reasons for pursuing them.

Methods: 74 graduates of Canadian urology programs from the years 2008 through 2010 were surveyed about their fellowship choices upon graduation. Surveys were administered directly to 2010 graduates at a chief residents' meeting, whereas 2008 and 2009 graduates were surveyed in 2010 through SurveyMonkey.com®. The survey contained 12 major questions with subheadings examining the subjects' attitudes about their fellowship choices. Where applicable, answers were quantified using a 5 point likert scale to express agreement or disagreement.

Results: The overall response rate was 73%. 85.4% of graduates are pursuing fellowships with oncology (40%) and minimally invasive urology (33.3%) being the most popular choices. Reasons cited for pursuing a fellowship included: interest in pursuing an academic career (63.1%), acquiring marketable skills to obtain a position in the community (58.7%), and interest in focusing their practice to this area of urology (82.7%). On the other hand, graduates rejected as reasons for pursuing a fellowship: inability to find a suitable position in urology in Canada (51.1%), feeling that residency did not equip them with the necessary skills to practice urology (47.8%), or learning about research methodology (54.3%). Graduates found the help of a urology faculty within their program (78.8%), networking at national or international meeting (55.3%), and their own initiative (76.1%) to be essential in obtaining the fellowship of their choice. Less helpful were sub-specialty organizations (55.3%), or electives at an outside institution (74.4%). 27.7% and 20.8% of graduates were offered a position in academic and community urology respectively prior to starting their fellowship. 76.2% of graduates felt they knew enough about academic urology to know if it would be a suitable career choice for them versus 50% regarding community urology. 58.8% of residents did a community elective during residency,

Table 1. P89. Change in AUA vs. EPIC Symptoms Summary Score after Brachytherapy

Change in AUASS	Mean AUASS Change	Mean EPIC summary change	Mean change in EPIC Subscales			
			Function	Bother	Incontinence	Obstructive/Irritative
>5	11	-23	-20	-26	-14	-27
1-4	2	-3	-2	-1	-2	-3
No change	0	1	0	1	0	1
-1-- 4	-2	4	4	5	3	5
>-5	-10	16	13	19	9	20

and 70.7% felt they would have benefited from additional elective time in the community. Graduates tend to be very productive academically co-authoring on average 9.9 peer-reviewed abstracts or papers during residency, and 8 during fellowship.

Conclusions: Graduates from Canadian urology programs tend to be very academically oriented, opting for additional training after residency.

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Career Outlooks and Choices of Graduating Canadian Urology Residents and Societal and Professional Implications

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Introduction: Manpower issues in Canadian urology have important societal implications and require ongoing assessment. However, little is known about the choices of graduating residents as well as their outlooks on the current state of the profession. These choices and attitudes are likely to shape the way urology is practiced in Canada in the future.

Methods: 74 graduates of Canadian urology programs from 2008 through 2010 were surveyed about their choices upon graduation as well as their opinions regarding the Canadian job market. Surveys were administered directly to 2010 graduates at a chief residents' meeting, whereas 2008 and 2009 graduates were surveyed in 2010 through SurveyMonkey.com®. The survey contained 13 major questions with subheadings examining the subjects' attitudes about career opportunities, and types of practices that they seek. Where applicable, answers were quantified using a 1 to 5 likert scale to express agreement or disagreement.

Results: The overall response rate was 73%. 61.6% of graduates rated the Canadian urology job market as poor or very poor. The majority of graduates have heard of no more than 2 to 4 available urology positions in the area they would like to practice in (53.1%) or nationwide (51.1%). Graduates found the help of a urology faculty within their program (71.2%), networking at meetings (73.4%), and community based electives (58%) to be essential in obtaining the position of their choice. The CUA (64.7%), AUA (68.6%), and advertizing in journals (57.7%) were found to be unhelpful. 90.4% of graduates are unaware of any CUA initiatives to identify available positions in Canada whereas 61.5% are aware of AUA initiatives to do the same in the USA. Location (98.1%), potential for income (76.9%), available resources (94%), comfort with partners (94.2%), and career opportunities for the spouse (78.4%) were identified as important factors when considering a job. The ideal department would be academic (64.1%), would have at least 5 partners (81.5%), be located in an urban area with a population of > 500,000 (63%).

Conclusions: Graduating Canadian urologists tend to be dissatisfied with their career opportunities in Canada. They tend to want to work in large academic departments located in large urban areas.

P92

Health Care Cost and Clinical Outcomes of Percutaneous Nephrolithomy vs. Ureteroscopy

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Background: Percutaneous nephrolithotomy (PCNL) and ureteroscopy (URS) are two commonly used approaches for large upper tract stones. We compared stone clearance and total health care cost of PCNL to URS for 1.5 to 3 cm renal stones.

Methods: We retrospectively reviewed the records of patients who underwent PCNL or URS at our institution from 2002 to 2009 by a single surgeon. Demographics, stone characteristics (size, number, density, and location), presence of pre-procedural ureteral stent in the URS cohort, operative time, number of operations, results of postoperative imaging, and total health care costs were compared between the two cohorts. Cost included anesthesia billing, operating room billing, Medicare surgeon reimbursement, equipment cost, cost for days off work, recovery room cost and daily hospitalization cost. Statistical and sensitivity analysis were performed.

Results: There were 160 patients in PCNL cohort and 37 patients in the URS cohort. PCNL has less operative time than overall URS cohort (127 min vs. 179 minutes, $p < 0.01$), but similar to pre-stented URS cohort (127 min vs. 149 min, $p = 0.29$). PCNL has less reoperative rates than overall URS cohort (median number of surgery of 1 vs. 2, $p < 0.01$), but similar number of stone treatment surgeries as pre-stented URS (1 vs. 1). Using stone fragment ≤ 2 mm on postoperative imaging as the criteria for stone clearance, PCNL has similar stone clearance rates as URS cohort (75% vs. 62%, $p = 0.12$), but inferior to the pre-stented URS cohort (75% vs. 100%, $p < 0.01$). PCNL is more cost saving than URS (median total health care cost of \$16,258 vs. \$19,843, $p = 0.02$), but similar to pre-stented URS (\$16,258 vs. \$15,175, $p = 0.59$).

Conclusions: PCNL is more cost effective than URS, but is similar in cost effectiveness as pre-stented URS for 1.5-3cm stones. For patients undergoing ureteroscopic stone intervention for large stones, we recommend pre-stenting to decrease health care cost and improve stone clearance.

P93

Pre-procedure Imaging Alters Management in One-fifth of All Ureteral Stone Patients

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Background: Repeat imaging with a radiograph of the kidneys, ureters, and bladder (KUB) is often obtained prior to treatment for ureteral stones, especially in patients whose initial imaging was obtained many days prior to planned treatment. We sought to determine the utility of reimaging with KUB in patients scheduled to undergo treatment for ureteral stones.

Methods: After institutional review board approval, forty patients scheduled to undergo either shockwave lithotripsy (SWL) or ureteroscopy (URS) for solitary calculi were consented for participation in our study. Participants provided a visual analog score (VAS) of their pain level at enrollment. Pain levels were reassessed and KUB radiographs were obtained on the day of their scheduled procedure before presenting to the pre-operative area. Radiographs were reviewed and used to inform surgical decision making. Changes to the planned procedure caused by this reimaging were noted.

Results: The median age of all patients was 50, with a male: female ratio of 1.3. At initial radiographic diagnosis, median stone size (greatest dimension) was 6 mm. Stone location was proximal in 18 patients, mid-ureteral in 4, and distal in 18. Of the 40 patients, 3 presented for their procedure without first obtaining their KUB and 2 reported that they had passed their stones and did not undergo a procedure or reimaging. Of the 35 patients who were reimaged, the test results changed the planned treatment of 7. Four of these patients had their procedures cancelled secondary to KUB results consistent with stone passage. Another patient's KUB was consistent with stone passage, but she continued to have 4 out of 10 pain. Cystoscopy with retrograde pyelography ultimately confirmed stone passage, and the SWL was cancelled. One patient's KUB revealed stone migration to the bladder, and he underwent cystoscopy and stone retrieval instead of scheduled SWL. One patient's KUB demonstrated stone movement to a location anterior to the sacrum, and the planned supine position SWL was changed to prone position SWL. Pain scores were not helpful in determining stone passage.

Conclusions: Repeat pre-operative imaging changed the anticipated procedure in 7/35 or 20% of the cases. Pain scales were not predictive of stone movement or of stone passage. Although reimaging did not alter management for the majority of patients, it did eliminate the additional risk and cost of a procedure for 11% of patients. For the remaining 9%, reimaging prevented an increase in anesthetic time from unforeseen intra-operative changes.

P94**Does the Type of Shockwave Lithotripter Matter: A Comparison of an Electrohydraulic Unit vs. an Electromagnetic Unit**

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Background: Extracorporeal Shockwave Lithotripsy (SWL) still represents the most commonly used treatment modality for the management of urinary tract calculi. Various technologies exist for shockwave generation including electrohydraulic, electromagnetic and piezoelectric. Several studies comparing electrohydraulic and electromagnetic lithotripters have shown mixed results. Our objective was to evaluate the effectiveness of a new electromagnetic lithotripter compared to our previous electrohydraulic lithotripter.

Methods: We compared 100 patients treated with the Philips Lithotron Ultra electrohydraulic lithotripter with 100 patients treated with the Storz Modulith SLX F2 electromagnetic lithotripter, matched on stone area(mm²), location, and BMI. The outcome measured was stone free rate and success rate at 2 weeks and 3 months. Success was defined as being either stone free, having residual sand or an asymptomatic fragment <4mm on KUB x-ray. We also compared complications and need for ancillary procedures between the two groups. In all patients, SWL treatment was continued to a maximum of 3000 shocks or until there was clear fluoroscopic evidence of complete fragmentation.

Results: The two groups were comparable in terms of stone size, location and density, BMI, presence of a stent and skin-to-stone distance. Univariate analysis showed no difference between the two groups for stone free or success rate at 2 weeks and 3 months. There was no difference in the complication rate and need for ancillary procedure between the groups. However, there was a trend toward a greater incidence of subcapsular hematoma in the Storz group that was not statistically significant (p=0.12). On average a significantly fewer number of shocks were administered with the Storz unit (p=0.02). Logistic regression, adjusting for stone size and location, BMI, presence of a stent and type of lithotripter, showed no effect for type of lithotripter. Stone size (p=0.002) and presence of a stent (p=0.025) were the only significant predictors of stone free rate at 3 months in this model.

Conclusions: The Phillips Lithron Ultra and Storz Modulith SLX F2 had equivalent stone free and success rates at 2 weeks and 3 months. However, the Storz Modulith demonstrated more efficient fragmentation as fewer shocks were administered.

P95**The Case against Universal Antibiotic Prophylaxis with Shockwave Lithotripsy: A Prospective Study Examining the Incidence of Bacteriuria and Urinary Tract Infection**

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Background: Controversy exists over the need for antibiotic prophylaxis prior to shockwave lithotripsy (SWL). The AUA's Best Practice Policy Statement on Urologic Surgery Antimicrobial Prophylaxis uses level 1A evidence to indicate universal antibiotic prophylaxis, whereas the EAU's Guidelines on Urological Infections cites level 1A evidence to indicate prophylaxis only for patients with urinary drainage tubes, ureteral stents or infected stones. This prospective, single-centre quality assurance study evaluates the use of targeted antibiotic prophylaxis in patients undergoing SWL.

Methods: Over a three-month period, patients undergoing SWL for renal and ureteral calculi were enrolled. All patients underwent urine dipstick, microscopy and culture prior to SWL. At our centre antibiotic prophylaxis

was provided to patients with nephrostomy tubes, history of infected stones or urine dipsticks with both nitrites and leukocytes. The presence of ureteral stents was not an indication for prophylaxis. All patients had a urine culture performed 3 days post-SWL if they did not undergo antibiotic prophylaxis, or 2 days after finishing their course of antibiotic prophylaxis. All patients completed a survey documenting fevers or urinary symptoms up to one-week post-treatment.

Results: 526 patients (63.7% male, 36.3% female) with a mean age of 54.17 years and BMI of 28.05 kg/m² were enrolled. 78 (15.1%) patients underwent SWL with previously placed ureteral stents. Only 3 (13.0%) of the positive urine cultures taken prior to SWL were both leukocyte and nitrite positive on urine dipstick, whereas 17 (54.8%) of the positive urine cultures were both leukocyte and nitrite negative on dipstick. 10 (2.2%) patients were administered antibiotic prophylaxis (6 of which had ureteral stents), and 14 (2.7%) were given antibiotics post-treatment. Post-SWL, only 1 (0.2%) patient developed a urinary tract infection (UTI) and 4 (0.8%) patients developed asymptomatic bacteriuria.

Conclusions: The rates of UTI and asymptomatic bacteriuria following SWL are extremely low (<1%) with targeted antibiotic prophylaxis. Furthermore, the ability of urine dipstick to screen for positive urine cultures is low in this urolithiasis population. This prospective case series questions the need for universal antibiotic prophylaxis prior to SWL, as well as the need for antibiotic prophylaxis in patients undergoing SWL with indwelling ureteral stents.

P96**Percutaneous Nephrolithotomy and Staged Uteroscopy for Kidney Stones Between 2 and 4 Centimeters: Comparative Effectiveness**

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Introduction: Current ureteroscopy practice is trending towards treating large stone burdens with consideration for staged ureteroscopy (SURS), whereas historically, percutaneous nephrolithotomy (PCNL) is primarily considered. This study evaluates these two procedures, PCNL and SURS, and determines the comparative effectiveness in treating stones between 2 and 4 centimeters in diameter.

Patients and Methods: With IRB approval, all PCNL patients charts who met criteria with stones between 2 and 4 centimeters were reviewed from 2000 through 2010. The SURS patients who met the same criteria were analyzed from 2005 through 2010. A comparison was performed for procedure length, rate of complication, hospital length of stay (HLOS), number of patients that required a second look, and overall stone free success.

Results: Of the patients who underwent PCNL, there were 207 (99 females) with an average BMI of 29.9. 47 (31 females) patients underwent planned SURS with an average BMI of 35.9. The PCNL group had an average procedure length of 138.1 minutes and a complication rate of 19.2%. These patients had an average HLOS of 2.6 days. 31% of patients required a second look. 91.8% were completely stone free. The SURS group had an average procedure length of 130.5 minutes (p=0.44) and a complication rate of 2.13%. Three SURS patients were admitted for an overall average HLOS of 0.1 day. 13% did not require the planned staged procedure. 80.9% (p=0.03) of patients were completely stone free.

Conclusions: The data suggests that PCNL can be performed with a higher rate of success when compared with SURS for these size stones. However, PCNL resulted in a higher rate of complication and longer HLOS, suggesting SURS should be considered as an alternative treatment in the appropriate patient with stones of this size.

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Staged Retrograde Endoscopic Lithotripsy as an Alternative to PCNL: An Update

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Introduction and Objectives: Although percutaneous nephrolithotomy (PCNL) remains the gold standard for clearance of large (>2 cm) renal calculi, staged ureteroscopy has gained acceptance as an appropriate alternative in patients who are less than ideal candidates for PCNL. We previously reported our series of 23 patients who had undergone staged procedures between 2003 and 2006. We now present our updated experience.

Methods: Following IRB approval, medical records were retrospectively reviewed to identify patients who had undergone staged ureteroscopy by one of two fellowship-trained endourologists between 2006 and 2010. Successful therapy was defined as fragmentation of total stone burden with no residual fragments larger than 2 mm. Data were analyzed using SPSS.

Results: Forty-eight additional patients underwent staged ureteroscopy for upper urinary tract calculi, and six had bilateral stone disease. Age, sex, and comorbidities were similar between cohorts. Patients in the

updated cohort were more likely to be obese (BMI>30, 63% vs. 30%, $p=0.01$) with 31% classified as morbidly obese (BMI>40) and were less likely to have a previous failed procedure (21% vs. 61%, $p<0.05$). Only two patients underwent staged ureteroscopy for an inability to establish percutaneous access (4%). Linear stone burden was 29.53 13.39 mm, and mean calculated stone volume was 7416 mm³ in the updated cohort. Significantly more patients progressed to second-stage operations (90.7% vs. 47.8%, $p<0.001$), and nine (19%) required three or more stages. Stone-free rates remained similar between groups (74.1% vs. 73.9%, $p=1.0$). In the 14 stone burdens of the updated cohort that were not completely cleared, five (36%) were the result of an inability to adequately deflect the ureteroscope to the lower pole. In the combined cohort, linear stone burden >40 mm and calculated stone volume >15,000 mm³ were once again associated with treatment failure (23%, 33%).

Conclusions: Our combined series, consisting of 71 patients, represents the largest reported experience of staged REL as an alternative to PCNL. Our practice has evolved to use staged REL as a primary treatment in patients with medical comorbidities regardless of previous treatment failure. Patients with unilateral stone burden <4 cm and significant comorbidities should be counseled that staged REL provides stone-free rates greater than 70% but may require two or more operative sessions.